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ABSTRACT

The City Technology Colleges in Great Britain were developed to teach science and information technology to students from 11 to 18 years of age. The approach adopted at the Bradford City Technology College, which was to open in September 1990, is one in which emphasis is given to combining established technologies with a new educational context. Two decisions had to be made--whether to standardize on MS-DOS, and whether to network the college. MS-DOS was chosen albeit with the knowledge that most existing software in Great Britain is for use on non-IBM-compatible computers. Networking was chosen for its results in better performance and reduction in hardware and software maintenance problems. The paper concludes with brief discussions of various educational applications of computers, including: (1) enabling technologies (word processing, desktop publishing, spreadsheets, and databases); (2) computer based learning materials (specific subject computer assisted learning programs, simulations); and (3) information sources (CD-ROM, online access, and the library catalog). It is expected that a broadband facility will be installed, which will enable the school to offer video services as well. (DB)

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AN INTEGRATED APPROACH TO INFORMATION TECHNOLOGY IN SCHOOLS

by

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AN INTEGRATED APPROACH TO INFORMATION TECHNOLOGY IN SCHOOLS - BRADFORD CITY TECHNOLOGY COLLEGE

I.R. Gomersall*

ABSTRACT

The role of the City Technology Colleges in Britain is outlined, and the underlying philosophy is discussed. Aspects of the planning of the Bradford City Technology College are discussed, especially in relation to Information Technology. The problem of networking is considered, and the practical solution described. Hardware and software choices are also discussed.

INTRODUCTION

The City Technology Colleges were set up as part of a government initiative to establish an initial 20 such schools, catering for the 11-18 age range, and giving particular emphasis to Science, Technology and Information Technology.

The schools have been surrounded by controversy, mainly concerned with the issue of whether they represent a sound allocation of resources in an education system which is in many places short of money. The argument centres on whether resources should be spread evenly across many institutions or, as the government felt, concentrated on a few institutions which would become "beacons of excellence". Less controversial, and in many ways much more interesting, has been the emphasis on Information Technology across the curriculum. At a time when major changes are evolving the City Technology Colleges offer an opportunity to innovate in this area without undue financial restrictions and, even more important, without the restrictions of an established, conservative hierarchy. In brief, it has been possible to look at the place of Information Technology in a school as a whole without any preconceptions.

This paper discusses the approach adopted at the Bradford City Technology College, which will open in September, 1990. It is the fourth such school to be set up, and the second to be purpose-built. As such it has been necessary to think through the computing requirements before the building was started, and this represented a fascinating challenge given the limited amount of experience on which to build.

PHILOSOPHY

Throughout the development phase the view has been taken that the school is in the business of *educational* innovation rather than *technological* innovation. This means, therefore, that the balance

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of activity should lean towards bringing together established technologies in a new educational context, rather than attempting to be at the cutting edge of the technology itself. This is important because all too often innovation of this kind fails because attempts are made to be at the forefront in both education and technology simutaneously, and a failure of the technology results in a failure of the whole enterprise. Such a failure is much less likely if technologies that are well-tried elsewhere (e.g. in the commercial world) are adopted.

NETWORKING

The two major decisions have been whether to standardise on MS-DOS and whether (and how) to network the college. Building on experience at Bradford Grammar School (Ref.1), the MS-DOS decision proved to be relatively easy and is discussed below. However, the networking problem proved much more difficult. Essentially this is because it was necessary to extrapolate from minimal experience of *good quality* networking in schools. Since schools in the U.K. have largely not adopted the MS-DOS standard, the limited networking experience has been built round very modest systems, rather than industry standards. As a consequence, well established configurations, such as Ethernet and Token Ring, and software such as Novell are virtually unheard of in schools.

Experience gained at Bradford Grammar School (ref. 1) with large numbers of MS-DOS machines, initially standalone with hard discs and more recently on an Ethernet, has demonstrated the clear advantages of networking in schools. In brief, a well-designed network results in better performance and a reduction in both hardware and software maintenance problems.

The case for appropriate networking is further enhanced by the need to offer video facilities and, ideally, more than one data channel. These factors point towards a multi-channel solution, and the need for ruggedness and a well-established technology points towards a broadband or broadband hybrid solution. In fact the latter is the one that was finally adopted, and is currently nearing completion.

ADMINISTRATION

The administrative requirements of the schools were relatively easy to deal with. Experience in this area is well-developed, especially in the U.S.A., and the choice of MS-DOS was obvious. In an international context this is hardly worth detailing, but it is worth mentioning that decisions in the U.K. are distorted because local, non IBM compatible, computers have come to dominate the educational market over the last ten years. The inevitable move to MS-DOS is therefore slow and controversial, because much of the existing software will not run on these machines.

EDUCATIONAL REQUIREMENTS

Traditionally in Britain computers have appeared in schools with an educational rather than an administrative function in mind. As a consequence the existing pool of hardware and software inevitably influences decisions much more in this area than in administration. In order to consider this in more detail, it is worth looking at the different types of application of the

technology for an educational purpose.

1. Enabling Technologies. *e.g. Wordprocessing, desktop publishing, spreadsheets, databases.*

These are based on the highly reliable generic packages that are widely available at reasonable prices. Basically they are replacing the pencil and paper as the medium for setting out, manipulating, presenting and storing information. Experience suggests that young children can easily master the use of these packages (in fact they find it trivial compared to the years that they have to devote to mastering the use of pencil and paper).

When this area is taken as a whole, and when price is taken into account, MS-DOS machines are easily the best choice in the U.K.

2. Computer Based Learning Materials. *e.g. Computer assisted learning, simulations etc. - generally subject specific.*

Most of the existing materials in the UK have been written for the Acorn BBC machines or the RM-Nimbus. Some of these materials are very good, but many are poor, and of very limited value from a learning point of view. Nevertheless they represent the best that is available at present, and so there is a short term need to provide computers they can run on until more materials appear for IBM compatibles.

3. Information Sources *e.g. CD-ROM, online access, library catalogue.*

Although at first sight most of these would be located in the library facility, there would be many advantages in being able to access the catalogue (and indeed other information) from anywhere in the school. Once again compatibility is very important, again pointing towards IBM type machines and an MS-DOS based catalogue.

All these considerations point towards the school building its IT provision around MS-DOS machines, and this was the solution adopted, with a few Acorn computers being made available on trolleys for Computer Assisted Learning applications.

VIDEO SERVICES

Once it has been decided to install a broadband facility, many video channels are available, and this give the school the opportunity to offer a very good service. At Bradford CTC this will include the standard four broadcast channels, weather satellite, satellite TV (foreign language transmissions), closed circuit TV and bulletin board. The system will also be used to provide a public address system for the school.

REFERENCES

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